

HUEY P. LONG BRIDGE

(Mississippi River Bridge)

(New Orleans Bridge)

(Mississippi River Crossing)

Spanning Mississippi River approximately midway between nine & twelve mile points upstream from & west of New Orleans

Jefferson

Jefferson Parish

Louisiana

HAER LA-17

LA-17

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

REDUCED COPIES OF MEASURED DRAWINGS

FIELD RECORDS

HISTORIC AMERICAN ENGINEERING RECORD

SOUTHEAST REGIONAL OFFICE

National Park Service

U.S. Department of the Interior

100 Alabama St. NW

Atlanta, GA 30303

HISTORIC AMERICAN ENGINEERING RECORD

HUEY P. LONG BRIDGE (Mississippi River Bridge, New Orleans Bridge, Mississippi River Crossing)

HAER No. LA- 17

Location: Spanning Mississippi River approximately midway between Nine and Twelve-Mile Points upstream from west of New Orleans.

USGS 1998 New Orleans West, LA (1:24,000 series)

NIMA 7943 INW-Series V885

UTM Location: Universal Transverse Mercator coordinates: (UTM Zone 15)

Mississippi River Mile 106 AHP

East Bank Approach: N3316640 E772370

West Bank Approach: N3314460 E773720

Date of Construction: Construction span: (mid 1933 through early 1935). Completed in 1935

Engineer: Modjeski, Masters & Chase, Inc.

Builder: Substructure Main Bridge: Siems-Helmets, Inc.
Superstructure Main Bridge: American Bridge Co.
Substructures Approaches: MacDonald Engineering Co.
Substructure Approaches: McClintic-Marshall Corporation
Lighting System: Paul M. Brignac Electric & Machine Co.
Earth Embankment: Jack Harris and National Construction Co.

Present Owner: The Public Belt Railroad Commission for the City of New Orleans

Present Use: Presently in use as a railroad and vehicular bridge.

Significance: The Huey P. Long Bridge, the first bridge to cross the Mississippi River in Louisiana, was named for the Governor during whose administration it was built. It is still considered a major engineering accomplishment and was recognized as the world's longest steel trestle railroad bridge at 22,996' (4.36 miles of structure) in length. It has two railroad tracks between trusses and two, two-lane highways bracketed to the outside. It was built during the depression of the 1930s at a cost of \$12.8 million. The bridge is listed on the National Register of Historic Places.

Report Prepared By: Coco & Company, Wayne Lawrence Coco, AIA, Architect, LLC
P.O. Box 111 or 510 Main St.
Simmesport, Louisiana 71369

Date: December 4, 2005

WRITTEN HISTORICAL AND DESCRIPTIVE DATA:

The written historical and descriptive data used as a basis for this section of the report is the 117 page, March 26, 1941 Mississippi River Bridge At New Orleans, Louisiana Final Report prepared by Frank M. Masters of Modjeski and Masters Engineers to The Public Belt Railroad Commission of the City of New Orleans (Field Record Item No. 1). It is not possible to summarize this report and do justice to the historical background of the bridge. The 1941 Final Report is a comprehensive document detailing in narrative, drawing and photographic form, the historical background of the concept, planning, legislative authorization, design and construction of the bridge substructure and superstructure. The report also includes sections detailing additional construction contracts for lighting, an administration building, embankment work, and settlement problems. In addition, the report includes the bridges principal dimensions and quantities, construction funding, construction cost breakdown by contracts and abstracts from the construction specifications. **This report is included as (Field Record Item No. 1)**

Additional written historical and descriptive data is included in this section of the report as supplemental information intended to add to, explain, or reference the information contained in the March 26, 1941 Final Report.

HISTORICAL BACKGROUND (Supplemental Information to the March 26, 1941 Final Report)

The New Orleans Public Belt Railroad

The New Orleans Public Belt Railroad was organized as the “Public Belt Railroad Association”, as a non-profit corporation owned by the citizens of the City of New Orleans. It was operated by an autonomous commission of the city. It was established by their charter as follows:

“to promote, encourage and develop the construction and operation of a terminal transfer railway, as formulated and recommended by the conference of the various Commercial and Industrial Associations of New Orleans and to disseminate facts in connection therewith, showing its importance and its benefit to the community; affording the people a Bureau of information a direct means of proceeding towards the accomplishment of a satisfactory terminal system and the removal of the present railroad tracks from our public levee and streets, and to consider all matters pertaining to the furtherance of these objects.” (See Photographic Index, HAER No. LA-17-52)

A public belt railroad was given consideration in the late 1880s when railroad construction by most of the trunk lines serving the different areas of the city experienced great activity. Initially, different areas of the city particularly the riverfront were served individually by multiple railroad trunk lines. This is shown in an early map of the greater New Orleans area showing the various

railroads serving the city (See Photographic Index, HAER No. LA-17-61). A committee of citizens, known as the Municipal Affairs Committee, decided that this was not the most efficient and economical way to provide rail service to the port area along the river, nor was it the best way to provide encouragement and impetus for commercial development in the port area and in the city (Public Belt Railroad, undated).

A report to the New Orleans City Council was given in January of 1889 suggesting a tentative route for the belt railroad. In 1897, the committee proposed the belt railroad should be owned and operated by the City of New Orleans so as to provide uniform rail service to the entire area adjacent to the port. The belt railroad would also handle all rail traffic moving on the trunk lines reaching the city. The plan was to provide impartial service in the most efficient economical way for all rail/water or water/rail traffic routed through the port and for other industries (Public Belt Railroad, undated) (See Photographic Index, HAER No. LA-17-61).

City ordinance No. 147 dated August 7, 1900, established the Public Belt Railroad. It was to be operated by the commission which was composed of the Mayor and selected members of the New Orleans City Council. The ordinance also provided an appropriation of \$10,000 per year, for four years, for the construction of the belt railroad. The Municipal Affairs Committee was also successful to have Ordinance No. 2683 passed in 1904 which amended and reenacted the original Ordinance No. 147 of August 7, 1900. This ordinance provided for the operation of the Public Belt Railroad to be vested in a Board of Commissioners that would be composed of the Mayor and sixteen tax-paying citizens of the City of New Orleans. That commission was organized on November 2, 1904. Although the Mayor of the City of New Orleans was the president of the commission, the active head was the president pro tempore who was elected by the commission from the members representing the various commercial organizations furnishing nominees for the commission. The ordinance also provided for a \$10,000 annual appropriation to be used to buy property and for construction of the Public Belt. This provision was to be extended to 1915 for a total of fifteen years (Public Belt Railroad, undated).

In 1905, construction started on a single track main line along the riverfront from the upper-line of Audubon Park to Press Street. Operation of this line began in 1908 with one steam locomotive. In 1914, the Public Belt Railroad Commission became very interested in a Mississippi River Crossing which is discussed in great detail beginning on page 8 of the 1941 Final Report (Public Belt Railroad, undated).

Over the 105 years of its existence, the operation, expansions and improvements of the Public Belt Railroad have been financed from earnings and the issuance of construction bonds which were serviced from the earnings. At near the end of the twentieth century, the Public Belt Railroad operated five diesel electric locomotives over 124 miles of track extending from the west side of the Huey P. Long Bridge to the Public Bulk Terminal on the Mississippi River Gulf Outlet and along both sides of the Industrial Canal (Public Belt Railroad, undated).

According to records, the Public Belt handled 35,713 cars in 1990 and business has increased steadily each year by approximately 10 percent. The Public Belt has five classification yards, two storage yards and interchanges with six trunk lines reaching New Orleans. The six trunk lines include lines by Kansas City Southern, Southern Pacific, Illinois Central, Union Pacific – Missouri Pacific, CSX and Norfolk Southern (Public Belt Railroad, undated).

The Public Belt Railroad owns, operates, and maintains the Huey P. Long Bridge and the railroad associated with the crossing. It extends 4.35 miles from abutment to abutment. A substantial work force of twenty-five to forty people is required to perform the constant maintenance of the bridge (Public Belt Railroad, undated).

Early Bridge History (Supplemental Information to the March 26, 1941 “Final Report”)

Refer to Field Record Item No. 1: March 26, 1941, Mississippi River Bridge At New Orleans, Louisiana Final Report, prepared by Frank M. Masters of Modjeski and Masters Engineers to The Public Belt Railroad Commission of the City of New Orleans. The following supplemental information is included:

(Supplemental Information to **pages 7 and 8** of 1941 Final Report) Refer to Photographic Index HAER No. LA-17-56 for photograph of “Double Track Rail Road Bridge over Mississippi River above the City of New Orleans, LA, U.S.A., to be built by the Southern Bridge & Railway Co., 1892.

(Supplemental Information to **pages 7 and 8** of 1941 Final Report)

Much talk and deliberation on the location and type of bridge that could and should be constructed across the Mississippi River at New Orleans took place between the late 1800s and 1930 before a final design and location was agreed upon and eventually selected. *The Engineering and Building Record and the Sanitary Engineer* reported in February 1889 that plans for constructing a Mississippi River bridge in Jefferson Parish had been completed and surveying by engineers had been done in the area for some time (LATODT, 2005).

The famed bridge engineer J.A.L. Waddell, in his 1916 Bridge Engineering book, Volume 1, printed by John Wiley & Sons, Inc. of New York and Chapman & Hall in London, discusses his plan for a 750 foot, double-leaf, bascule bridge for a proposed crossing of the Mississippi River just below New Orleans. It was designed jointly by Waddell and his brother, Montgomery for the noted railroad builder, Collis P. Huntington and his consulting engineer, Dr. Elmer L. Corthell (Waddell, 1916). The bascule bridge was designed where the rollers were to be stationary and the counterweights were to be attached to long arms extending beyond the rolling segment and outside thereof. Unfortunately, Mr. Huntington died before the project could materialize. A drawing entitled “Proposed Roller-bearing-bascule Bridge over the Mississippi River at New Orleans, La.”, is all that survives (Waddell, 1916) (Field Record Item No. 3).

(Supplemental Information to **page 8** of 1941 Final Report) The 1919, “Report – Mississippi Railroad Crossing at New Orleans and Plan of Terminal Development” for the Board of

Advisory Engineers, Public Belt Railroad Commission, New Orleans, Louisiana discusses the issues between a high-level and low-level structure in general leading to the consensus of opinion in favor of a low-level bridge.

First: The elevation of the grade line at mid-span is about 50 feet above Gulf Datum for a low-level bridge, while it would probably have to be about 181 feet for a high-level bridge above the City and about 206 feet for a similar structure below the City. The differences of 131 feet in the one case and 156 feet in the other correspond, as far as coal consumption alone is involved for trains in motion, to extra equivalent hauls on the level of 13.1 and 15.6 miles respectively, besides which are to be considered the value of time lost in going over the great hump in grade and the extra wear and tear on rolling stock. Against this should be considered the increase power required to start the train on a grade in front of the moving span of a low-level bridge.

Second: The first cost of a high-level bridge with its long, high and expensive approaches, is far greater than that of a corresponding low-level bridge. For instance, the total cost of a high-level combined bridge at Crossing "D" is about \$15,466,000, using pre-war unit-prices for material and labor, as against about \$6,736,000 for the total cost of the low-level bridge at the same location.

Third: The annual cost of maintenance for a high-level bridge is much more than that for a low-level bridge, because of the greater area of steel structure to keep properly painted. As for the cost of operation of structure, in the case of the combined bridge, that of handling the lifting span would be fully offset by the expense of operating the four (4) elevators at the levees, required for the use of pedestrians; because although it takes a much greater horsepower to raise and lower the lift-span than it does to operate the elevators, it needs fewer men; and the number of lifts of the span per day is comparatively small, while the four elevators would be in continuous operation during the most of the twenty-four hours of every day.

Best Type of Movable Span: There are recognized today by the engineering profession, as legitimate construction, only three types of movable span, viz: the swing, the bascule, and the vertical lift. As to the first-mentioned type, in order to give clear openings great enough to meet modern navigation requirements on the Mississippi, the length of span would have to be at least some 200 feet greater than that of the longest swing-span yet built, and possibly very much more. Such construction would not only be exceedingly expensive, but also the time required to set in motion and bring to rest the vast mass of materials involved in its building would be prohibitory.

As for the bascule type, the length of each arm would probably have to be much greater than that of any bascule bridge ever built; and the first cost of both superstructure and substructure would be excessive. Again, so far as the Board is aware, no satisfactory detail for connecting the meeting ends of a large, heavily loaded, two-leafed bascule has as yet been constructed.

For the particular conditions of this crossing, the vertical-lift type of bridge seems superior to either the swing or the bascule type, and in the opinion of the Board would be materially less expensive, when the relative limiting lengths of opening span of the various types are taken into consideration.

Cantilever Spans: The cantilevering of the inner ends of the two flanking spans for supporting the vertical-lift span is a new feature in bridge designing. It permits a large flotilla of barges,

with a steamboat near the center thereof, to pass under the structure without obstruction; and the moving span is so long that all ocean-going vessels could readily go through without striking the cantilevers. The detailing of the ends of these with rigid protective fenders would be such that, in case of a vessel's rubbing against them, no harm would result to the structure. This cantilevering, unless carried too far, results in an economy. In an analytical comparison, (see Appendix), in which the loading on the piers as well as the weights of the superstructure are taken into consideration, the 500 ft. clear opening shows a saving in cost, as compared with the layout for a 300 ft. clear opening without cantilevers; the 600 ft. clear opening proved to be about equal in cost; and the 700 ft. clear opening is shown to be materially more (Board of Advisory Engineers, Public Belt Railroad Commission, 1919).

The Public Belt Railroad Commission was composed of the following Commissioners:

Hon. Martin Behrman, Mayor, President
John H. Murphy, Representing the New Orleans Board of Trade.
Thomas F. Cunningham, Representing the Association of Commerce.
Albert Godchaux, Representing the Association of Commerce.
Edgar B. Stern, Representing the Cotton Exchange.
Arthur W. Simpson, Representing the Cotton Exchange.
W.W. Van Meter, Representing the Cont's & Dealers' Exchange.
Victor Lambou, Representing the Cont's & Dealers Exchange.

W.K. Seago, Representing the Louisiana Sugar & Rice Exchange.
Wm. B. Bloomfield, Representing the Louisiana Sugar and Rice Exchange.
James W. Porch, Representing the New Orleans Board of Trade.
George P. Thompson, Representing the New Orleans Board of Trade.
Jas. R. Meyers, At Large.
Adam Lorch, At Large.
Jas. D. Hill, At Large.
Ginder Abbott, At Large.
S.A. Segari, At Large.
Frank H. Jaubert, Secty-Treas. And Gen'l Manager.
A.F. Barclay, Engineer
I.D. Moore, City Attorney, Ex-Officio Attorney.
Thos. F. Willis, City Engineer, Ex-Officio Engineer

(Supplemental Information to **page 9**, of 1941 Final Report)

Refer to Photographic Index Item HAER No. LA-17-61, early map of "Location of New Orleans Bridge" and the various railroad trunk lines serving the greater New Orleans area.

(Supplemental Information to **page 9**, of 1941 Final Report)

Ralph Modjeski was engaged to assist the Public Belt Railroad Commission in November of 1924 to assist in preparing an application for a War Department Permit for a low-level bridge as recommended by the Advisory Board. A March 1925 drawing entitled "Proposed Bridge Over The Mississippi River North of New Orleans, Louisiana Plan "E" was produced by Ralph

Modjeski showing a low-level bridge made of three, 626' clear simple river spans in the middle of the river; a 624' clear simple span on the east bank; a 420' clear lift span near the west bank and a 506' clear simple span on the west bank. This work must have been done while Mr. Modjeski was engaged by the Commission to prepare a War Department permit for a low-level bridge (Masters, 1941) (HAER No. LA-17-53).

(Supplemental Information to **page 9, 10 and 11** of 1941 Final Report)

Refer to Photographic Index HAER No. LA-17-54 for 1925 and 1930 War Permit Drawing by Modjeski, Masters & Chase for high-level bridge.

(Supplemental Information to **page 9, 10 and 11** of 1941 Final Report)

December 12, 1930 War Department Special Instrument amending the original January 14, 1929 and January 17, 1929 permits for approval of the construction of the bridge. The amendment "modifies the plans so as to provide a vertical clearance of 153' above mean gulf level for a horizontal distance of 500' under the 750-foot clear channel span, and a modification in arrangement of spans, which modifications are shown on the plans hereto attached". The approval is granted under the condition that "suitable fenders were to be built and maintained upon plans to be submitted to and approved by the Chief of Engineers before construction is commenced," (See Field Record Item Nos. 4 and 5).

(Supplemental Information to **pages 9 and 10** of 1941 Final Report)

Refer to Photographic Index HAER No. LA-17-55 for photograph of 1927 pencil drawing mounted on card stock by artist Hugh Ferriss of "Double Track Rail Road Bridge over Mississippi River above the City of New Orleans, LA.

(Supplemental Information to **pages 9, 10 and 11** of 1941 Final Report)

Refer to Photographic Index HAER No. LA-17-57, Early map showing "Sites of Major Bridges across the Mississippi below St. Louis", which includes one at New Orleans.

(Supplemental Information to **pages 9, 10 and 11** of 1941 Final Report)

Refer to Photographic Index HAER No. LA-17-58, May 1930 linen drawing showing elevations of Mississippi River Bridges From St. Louis" to New Orleans.

(Supplemental Information to **pages 9, 10 and 11** of 1941 Final Report)

Refer to Photographic Index HAER No. LA-17-59, May 1930 linen drawing showing elevations of "Mississippi River Bridges from St. Louis to New Orleans", the last drawing showing a high-level cantilever truss span which was not built.

(Supplemental Information to **pages 11 and 12** of 1941 Final Report)

Refer to Photographic Index HAER No. LA-17-60, undated 12" x 36" pen and ink drawing by Modjeski, Masters and Chase, Bridge Engineers. This illustration must have been an accurate delineation of the final bridge design approved by the Public Belt Railroad Commission and permitted by the War Department.

Bridge Engineers

The Huey P. Long bridge design is attributed to the bridge engineering firm (corporation) of Modjeski, Masters and Chase. An engineering contract was executed between Ralph Modjeski, President; Frank M. Masters, Vice-President and Treasurer; and Clement E. Chase, Vice-President and Secretary, and the Public Belt Railroad Commission for the City of New Orleans represented by its President, Pro.Tempore. Thomas F. Cunningham, on October 6, 1931. The contract actually transfers a previous contract with Ralph Modjeski dated February 1, 1926 to Modjeski, Masters & Chase, a Pennsylvania Corporation. The contract agrees to pay the corporation "the sum of \$10,000 until such payments shall have aggregated the sum of \$320,000.00" (New Orleans Public Belt Railroad, 1931) (See Field Record Item No. 6).

Ralph Modjeski (See HAER No. LA-17-51)

Ralph Modjeski was born on January 27, 1861 in Cracow, Austrian Poland to parents Gustav Sinnmayer Modrezejewski and Helena Opid. He received his early education in grammar and high schools in Cracow, Poland until he immigrated to America with his mother in the summer of 1876. He attended night school in San Francisco, California from 1877 through 1878, and then went to Paris, France from 1878 through 1881 to prepare for college. From 1881 through 1885 he attended Government College "L'Ecole des Ponts at Chaussees", Paris, France and graduated with a degree in "Civil Engineering" at the head of his class.

Upon graduating from college he returned to America and worked with George W. Morison, one of America's leading Civil Engineers, as assistant engineer on the Union Pacific Bridge, in Omaha, Nebraska. He remained with George Morison until 1892. During this period Modjeski was the chief draftsman in charge of design for the Mississippi River Bridge in Memphis, Tennessee. In 1893, Modjeski opened his own office in Chicago as a Civil Engineer beginning his independent practice.

Early in his independent career he designed a fireproof warehouse for Arsenal in Rock Island, Illinois for the United States Government, and standard designs for steel bridges for the Northern Pacific Railway Company. His earliest major work was the design of the \$3,500,000 Thebes Bridge over the Mississippi River in Thebes, Illinois between 1902 and 1905. Some of the bridges he would later design include the 1905 Bismarck Bridge over the Missouri River in Bismarck, North Dakota for the Northern Pacific Railway Company; the 1906 Peoria Bridge, over the Illinois River in Peoria, Illinois for the Central Illinois Construction Company; the \$4,000,000, 1908 Columbia River and Willamette River Bridges, both in Portland, Oregon; the \$1,500,000, 1910 McKinley Bridge over the Mississippi River at St. Louis, Missouri for the St. Louis Electric Bridge Company; the \$3,500,000, 1916 Harahan Bridge over the Mississippi River at Memphis, Tennessee; The 1916 Keokuk Bridge over the Mississippi River at Keokuk, Iowa; the \$17,000,000, 1918 Quebec Bridge over the St. Lawrence River in Quebec, Canada; the \$37,000,000, 1927 Delaware River Bridge over the Delaware River between Philadelphia, PA

and Camden, NJ; and the \$72,000,000, 1931 San Francisco-Oakland Bay Bridge (Trans Bay) for the State of California.

It was during the association with the corporation of Modjeski, Masters & Chase that he was involved with the design of the \$14,500,000, 1926-1935 New Orleans Bridge over the Mississippi River at New Orleans for the State of Louisiana, the City of New Orleans and the Public Belt Railroad Commission of New Orleans. The firm would eventually design many other bridges in the country including the 1931 Baton Rouge (Airline Highway) Bridge over the Mississippi River for Missouri Pacific Railroad and the Louisiana State Highway Railway and Highway Cantilever Bridge.

He was a Fellow in the American Association for the Advancement of Science, and a Fellow in the American Geographical Society. He was a member of the National Academy of Sciences, the American Institute of Architects, the American Institute of Consulting Engineers, the American Philosophical Society, the American Railway Engineering Association, the American Society of Civil Engineers, the American Society of French Legion of Honor, the American Society for Steel Treating, the American Society for Testing Materials, the Polish Institute of Arts & Letters, and many other civic and fraternal organizations.

In 1914, he received the Howard N. Potts Gold Medal and in 1922 received the Franklin Medal. In 1924, he received the John Scott Medal of Philadelphia and the Washington Award in 1931. He received the honorary degree of "Doctor of Engineering" from the University of Illinois in 1911, the Pennsylvania Military College in 1927, and the Polytechnic Institute of Lwow, Poland. In 1926, he was made "Knight of the Legion of Honor" by the Republic of France (Journal of the Western Society of Engineers) and (Modjeski, Date Unknown).

In 1930, Ralph Modjeski was honored to receive the John Fritz Medal "for notable achievement as an engineer of great bridges combining the principles of strength and beauty". He was recognized posthumously for his great achievements in 1944, at the autumn meeting of the National Academy of Sciences of the United States of America in a biographical memoir presented by W. F. Durand (Durand, 1944). Ralph Modjeski died in 1940 at the age of 79.

Frank M. Masters (See HAER No. LA-17-50)

Frank M. Masters was born June 18, 1883, in Meyersdale, Somerset County, Pennsylvania, the son of Clarendon G. Masters and Eliza Zuma Beachley. After attending local elementary school he graduated from Everett High School in 1899, at the age of 15. He entered Mercersburg Academy and Cascadila Academy for special works in 1903 to begin his formal education. He enrolled in the School of Engineering at Cornell University in 1904 intending to pursue a degree in electrical engineering. He was forced to leave Cornell after his first year for financial reasons. He then went to Pittsburgh where he secured a position with Ralph Modjeski to perform inspection of the structural material for the Bismarck Bridge (Masters, 1962).

In 1905 he worked for the Twin City Rapid Transit Company in Minneapolis, Minnesota to help design and inspect materials and erection of the reconstruction of the three-span arch bridge at Lake Street over the Mississippi River between Minneapolis and St. Paul. He attended night school at the University of Minnesota to further his formal education.

During 1905 and 1906, he worked in the Chicago office of Ralph Modjeski designing and checking plans for the Vancouver-Portland Bridges over the Columbia River. In 1907 and 1908, he helped establish an office for Ralph Modjeski in Pittsburgh, Pennsylvania. He was in charge of the work east of Chicago. During this period he attended Carnegie Institute of Technology.

From 1909 through 1912, Masters was in charge of the work for the Oregon Trunk Railway and Spokane, Portland and Seattle Railway bridges over the Deshutes, Crooked River, Celilo, Columbia and other jobs. From 1913 through 1915 he help Ralph Modjeski establish an office in New York. During this period he conducted research work for the design of the C.B. &Q Railway Bridge over the Ohio River at Metropolis, Illinois. He also worked for the New Haven Railway testing large members on the design of the Quebec Bridge. He prepared specifications for special alloy silicon steel for the Metropolis Bridge and Mayari steel for the Mississippi River Bridge at Memphis. Masters furthered his formal education by attending Columbia University during this time as well (Masters, 1962 and Author Unknown, Date Unknown).

In 1916, Mr. Masters was in charge of the fabrication and rolling of materials and work on the design and construction of the Memphis Bridge crossing the Mississippi. Upon completion of the Memphis Bridge, he established his independent practice as a consulting engineer opening an office in Harrisburg, Pennsylvania and under the direction of J. C. Bland, Consulting Engineer for the Louisville Bridge Company. He was in charge of the reconstruction of the double track railway bridge over the Ohio River owned by the Pennsylvania Railroad.

In 1917, Masters was commissioned Major of Ordnance, located in Washington and later transferred to the Philadelphia Ordnance Department. In June of 1919, he was discharged from the Army and resumed his practice in Harrisburg. He accepted a position as Special Engineer for the Terminal Railroad Association in St. Louis, Missouri in charge of the maintenance and inspection of the Eads Bridge, the Merchant Terminal Viaduct and the Merchants Bridge. During this period he became an associate of Ralph Modjeski and assisted him in the work on the construction of the Suspension Bridge across the Delaware between Philadelphia and Camden (Masters, 1962 and Author Unknown, Date Unknown).

From 1922 through 1926, in association with Ralph Modjeski, he designed and supervised construction of a concrete arch bridge over the Susquehanna River at Clarks Ferry, Pennsylvania and the Susquehanna River Bridge at Market Street in Harrisburg, Pennsylvania. In 1926, he became a partner with Ralph Modjeski.

In 1931, Masters became Vice-President and Treasurer of the corporation of Modjeski, Masters & Chase. From 1926 through 1940, he was part of the team that designed and supervised

construction of some major bridge projects including the four-lane vehicular cantilever bridge over the Ohio River at Louisville, Kentucky, the Portland-Tualatin Tunnel, Portland Oregon; the bridge over the Delaware River between Tacony, Philadelphia, Pennsylvania and Palmyra, New Jersey; Ohio River Bridge at Evansville, Indiana; the Suspension Bridge over the Ohio River at Maysville, Kentucky; the bridge over the Cumberland River at Smithland, Kentucky; acted as consulting engineer to the City of New York; the Mississippi River Bridge (Airline Highway Bridge) at Baton Rouge, Louisiana; and not the least of which included the redesign and supervision of the construction of the Mississippi River Bridge at New Orleans, Louisiana for the Public Belt Railroad Commission and the State of Louisiana (Masters, 1962 and Author Unknown, Date Unknown).

Between 1933 and 1936 he served as consultant to the High Commission of the Union of Soviet Socialist Republics (USSR) on the design of the superstructure for the proposed Palace of the Soviets.

Between 1937 and 1938 he served as consultant to the New Orleans, Texas and Mexico Railway, and the Army Corps of Engineers for the extension to their railway bridge over the Atchafalaya River at Krotz Springs, Louisiana; acted as consultant for the Army Corps of Engineers and the Southern Pacific Railway to prepare plans for the rising of the bridge over the Atchafalaya River at Morgan City, Louisiana, and acted as consultant and reported to the Army Corps of Engineers on the Morganza Floodway Structures.

He was a member of the American Society of Civil Engineers, the American Institute of Consulting Engineers, the American Railway Engineering Association, the American Society of Testing Materials, the American Concrete Institute, the American Association for the Advancement of Science, the Franklin Institute and an honorary member of the Engineers Club of Louisville Kentucky (Masters, 1962 and Author Unknown, Date Unknown). Frank M. Masters Died in 1974 at the age of 91.

Clement Edward Chase (1888-1933)

Clement Edward Chase was born on July 26, 1888, in Omaha, Nebraska, the son of Champion Clement and Lula Belle (Edwards) Chase. He was a graduate in Civil Engineering from Cornell University in 1910. While a student, he began working for noted engineer Ralph Modjeski in 1906. While with Ralph Modjeski, he was transferred in 1911 to Oregon as an assistant engineer to work on the Oregon Trunk Railroad (National Cyclopedia of American Biography, 1935) (See Field Record Item No. 25).

From 1913 to 1917 he was Chief Inspector in charge of the Pittsburgh Inspection Office. In 1917 he went to Poughkeepsie, New York as resident engineer on the remodeling of the Central New England Railroad Bridge over the Hudson River. In 1919, he was transferred to the New York office of Ralph Modjeski to check the design of the Ohio River Bridge of the Cincinnati-Southern Railway at Cincinnati. During the period between 1920 through 1927, he was principal

assistant engineer of the Delaware River Bridge (Benjamin Franklin Bridge) between Philadelphia, Pennsylvania and Camden, New Jersey (National Cyclopedia of American Biography, 1935).

He became a partner in the firm of Modjeski and Chase and in 1931 he became a partner in the corporation of Modjeski, Masters & Chase to work on the Mississippi River Bridge at New Orleans for the Public Belt Railroad Commission (Durand, 1944) (New Orleans Public Belt Railroad, 1931).

Between 1927 and 1932 he worked as a partner with Modjeski, Masters & Chase, Inc., on the Tacony-Palmyra Bridge over the Delaware River between Tacony, Philadelphia, Pennsylvania and Palmyra, New Jersey; and the Mississippi River Bridge at New Orleans, Louisiana. He also worked as a partner with Ralph Modjeski from 1927 through the Fall of 1933 on the Ambassador Bridge over the Detroit River between Detroit Michigan and Sandwich, Ontario Canada; the Henry Avenue Bridge over Reading Tracks, Philadelphia, Pennsylvania; and the Henry Avenue Bridge over Wissahickon Crick, Philadelphia, Pennsylvania (Durand, 1944).

Clement E. Chase met his untimely death on September 18, 1933, at the age of 45, when he fell from the Delaware River Bridge, a drop of 120'. (Modjeski, Masters & Chase correspondence, 1933) (See Field Record Item No. 8). At the time of his death, he was directing the formation of the engineering organization and planning the construction of a high speed electric passenger railway over the Delaware River Bridge for the Delaware River Joint Commission.

Mr. Chase received the Fuertes Medal from Cornell University and the Collingswood Medal from the American Society of Civil Engineers. He was a member of the American Society of Civil Engineers, the American Society of Testing Materials, the Franklin Institute, and other fraternal and professional organizations (National Cyclopedia of American Biography, 1935).

Legislative Authorities and Enactments:

The written historical and descriptive data used as a basis for this section of the report is the March 26, 1941 Mississippi River Bridge At New Orleans, Louisiana Final Report prepared by Frank M. Masters of Modjeski and Masters Engineers to The Public Belt Railroad Commission of the City of New Orleans on pages 15 and 16 (See Field Record Item No. 1).

BRIDGE CONSTRUCTION

Bidding, Contracts and Construction Start-up (Supplemental Information to 1941 Final Report)

(Supplemental Information to pages 12, 13 and 14 of the 1941 Final Report)

Sometime after the early part of 1931, when the State of Louisiana and the City of New Orleans were assured that the bonds for the construction of the bridge could be sold, four contracts for

construction, Nos. 3, 4, 5 and 6, were let out for bids. The bids were advertised in the New Orleans Morning Tribune beginning July 21, 1931, calling for bids to be received at 2:00 p.m. Central Standard Time on Tuesday, September 15, 1931 (Morning Tribune, 1931) (See Field Item No. 7).

In a news article published on September 16, 1931, the New Orleans Morning Tribune reported the bid opening held the previous day. An accompanying photograph shows the group reviewing the bids including Governor Huey P. Long; O.K. Allen, Chairman of the State Highway Commission; New Orleans Mayor and President of the Public Belt Railroad Commission, T. Semmes Walmsley; and Robert Barclay, Chief Engineer of the Public Belt Railroad. Also pictured attending the bid opening were Mr. Shushan, President of the Orleans Parish Levee Board and Frank H. Joubert, General Manager of the Public Belt Railroad. In the article, bridge engineer, Ralph Modjeski indicated that construction on the bridge might start before Christmas, 1931 (Morning Tribune, 1931) (Photographic Index HAER No. LA-17-63).

About a month later, an October 14, 1931 Times-Picayune news article depicts the new bridge to be built using drawings and photographs and announces the approaching start of construction (Times-Picayune, 1931) (Photographic Index HAER No. LA-17-62).

A Times-Picayune newspaper article dated December 29, 1931, indicated that the scheduled signing of the nearly \$13,000,000 bridge contract had to be postponed because Governor O.K. Allen failed to appear at the offices of the Public Belt Railroad Commission at the New Orleans City Hall (Times-Picayune, 1931) (See Field Record Item No. 9). Difficulties persisted for almost one full year after many attempts to dispose of the bonds. It was not until a year later on December 30, 1932 that the four major contracts were signed and the work began the next day on December 31, 1932. This was duly recorded in the Daily Diary kept by the Resident Engineer of Construction for Modjeski, Masters and Chase, Inc., Mr. C. Glennon Melville (See Field Record Item No. 10).

During the period from the receipt of bids in 1931 and the start of construction in December of 1932 the bridge engineers, the State of Louisiana, the Public Belt Railroad Commission, the City of New Orleans and every politician of any rank, received hundreds of requests for jobs and positions associated with the anticipated construction of the bridge. The 1929 crash of the stock market had propelled the effects of the growing economic depression in America. On January 7, 1931, the Committee for Unemployment Relief released a report showing that 4 to 5 million Americans were out of work. By the end of the year, 2,293 banks had suspended operations and by the end of 1932, another 1,493 banks had failed as well. Despite the numerous economic stimulus acts passed by the Roosevelt administration, by the end of 1933 there were still over 4,000 banks that had suspended operations even though the economy was beginning to show slow signs of recovery (America's Great Depression, 2005).

Yet with all of the negative energy powering the direction of the country and the world at this time, including the rise to power of Adolph Hitler as Chancellor of Germany, some remarkable

achievements were taking place in 1933. On January 5, of that year, construction began on the Golden Gate Bridge in San Francisco, the Tennessee Valley Authority was created in May and construction had finally begun on the new Mississippi River Bridge at New Orleans, Louisiana (America's Great Depression, 2005).

Employment opportunities in Louisiana were slim. The news that over \$13,000,000 dollars would be spent in the New Orleans area during this depressed economic time was good. Request for jobs and employment associated with the bridge construction flooded the offices of the bridge engineers and the architects designing the administration building. Some bold request even went to U. S. Senator Huey P. Long and Governor O.K. Allen. During 1932, Modjeski, Master, & Chase had no official office in New Orleans and stayed in various hotels when in New Orleans on business, specifically the Roosevelt Hotel, the Jung Hotel and the Bienville Hotel. Most of the requests went directly to the hotels in which the bridge engineers happen to be staying at the time. Some applicants made trips to the hotel for personal interviews. Attached are representative samplings of typical letters of application for employment by people ranging from laborers to professional engineers from Louisiana and other parts of the country (See Field Record Item Nos. 11 through 19).

General Description of Bridge

The written historical and descriptive data used as a basis for this section of the report is the March 26, 1941 Mississippi River Bridge At New Orleans, Louisiana Final Report prepared by Frank M. Masters of Modjeski and Masters Engineers to The Public Belt Railroad Commission of the City of New Orleans on pages 17 through 19 (See Field Record Item No. 1 and No. 2).

Refer to 8" x 10" black and white photographic prints made from original 1933, 8" x 10" black and white photographic negative. See Photographic Index HAER No. LA-17-79 through 85 and HAER No. LA-17-88 through 94.

Design of Bridge Substructure

The written historical and descriptive data used as a basis for this section of the report is the March 26, 1941 Mississippi River Bridge At New Orleans, Louisiana Final Report prepared by Frank M. Masters of Modjeski and Masters Engineers to The Public Belt Railroad Commission of the City of New Orleans on pages 20 through 24 (See Field Record Item No. 1).

Refer to copies of original Mississippi River Bridge at New Orleans drawings by Modjeski, Masters and Chase, Bridge Engineers, HAER No. LA-17, Sheets 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11 of 28.

Design of Bridge Superstructure

The written historical and descriptive data used as a basis for this section of the report is the March 26, 1941 Mississippi River Bridge At New Orleans, Louisiana Final Report prepared by Frank M. Masters of Modjeski and Masters Engineers to The Public Belt Railroad Commission of the City of New Orleans on pages 25 through 28 (See Field Record Item No. 1).

Refer to copies of original Mississippi River Bridge at New Orleans drawings by Modjeski, Masters and Chase, Bridge Engineers, HAER No. LA-17, Sheets 12, 13, 14 and 15 of 28.

Construction of Main Bridge Substructure

The written historical and descriptive data used as a basis for this section of the report is the March 26, 1941 Mississippi River Bridge At New Orleans, Louisiana Final Report prepared by Frank M. Masters of Modjeski and Masters Engineers to The Public Belt Railroad Commission of the City of New Orleans on pages 29 through 54 (See Field Record Item No. 1).

Refer to copies of original Mississippi River Bridge at New Orleans drawings by Modjeski, Masters and Chase, Bridge Engineers, HAER No. LA-17, Sheets 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11 of 28.

Refer to 4" x 5" black and white photographs of the existing bridge (2005) taken by Mark Lamkin, Photographer. See Photographic Index HAER No. LA-17-18 through 26. Refer to 8" x 10" black and white photographic prints. See Photographic Index HAER No. LA-17-64 through 71 and HAER No. LA-17-95 through 148.

(Supplemental Information to 1941 Final Report)

September 21, 1933 letter from C. Glennon Melville, Bridge Engineer of Construction, to Modjeski, Masters and Chase, reporting the accidental death of a carpenter, Aaron Baer who fell from the falsework at Pier No. 2 (See Field Record Item No. 20).

Construction of Approach Substructure

(Supplemental Information to page 58 of 1941 Final Report)

The Highway traffic circles on each bank were added to the substructure contract as an extra work order. Although the record of exactly which plants were used to landscape the traffic circles could not be located, a copy of a letter from R.P. Farnsworth & Company dated August 21, 1936, quotes the cost by the Gentilly Terrace Nursery to replace some of the plants that had died. The list of plants to be replaced in each circle gives a good sampling of the types of plants used. (See HAER No. LA-17, Sheet Nos. 18 and 19 of 28) (See Field Record Item No. 23).

The written historical and descriptive data used as a basis for this section of the report is the March 26, 1941 Mississippi River Bridge At New Orleans, Louisiana Final Report prepared by Frank M. Masters of Modjeski and Masters Engineers to The Public Belt Railroad Commission of the City of New Orleans on pages 55 through 59 (See Field Record Item No. 1).

Refer to copies of original Mississippi River Bridge at New Orleans drawings by Modjeski, Masters and Chase, Bridge Engineers, HAER No. LA-17 Sheet Nos. 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, and 28.

Refer to 4" x 5" black and white photographs of the existing bridge (2005) taken by Mark Lamkin, Photographer. See Photographic Index HAER Nos. LA-17-1 through LA-17-6; HAER Nos. LA-17- 9, 12, 13, 14 and 16.

Refer to 8" x 10" black and white photographic prints. See Photographic Index HAER Nos. LA-17-65, 66, 67, 69, 72, 73, 86, 88, 89, 91, 92 and HAER No. LA-17-175 through LA-17-188 and HAER Nos. LA-17-201 and LA-17-203.

Construction of Main Bridge Superstructure

The written historical and descriptive data used as a basis for this section of the report is the March 26, 1941 Mississippi River Bridge At New Orleans, Louisiana Final Report prepared by Frank M. Masters of Modjeski and Masters Engineers to The Public Belt Railroad Commission of the City of New Orleans on pages 60 through 74 (See Field Record Item No. 1).

Refer to copies of original Mississippi River Bridge at New Orleans drawings by Modjeski, Masters and Chase, Bridge Engineers, HAER No. LA-17, Sheet Nos. 12, 13, 14 and 15 of 28.

Refer to 4" x 5" black and white photographs of the existing bridge (2005) taken by Mark Lamkin, Photographer. See Photographic Index HAER No. LA-17-27 through 47.

Refer to 8" x 10" black and white photographic prints. See Photographic Index HAER No. LA-17-75, 76, 77, 78, 90, 93, 94, HAER No. LA -17-153 through 174 and HAER No. LA-17-202.

(Supplemental Information to 1941 Final Report)

Hand written daily log by C. Glennon Melville, Engineer of Construction written on Tuesday, April 9, 1935 reporting that Commander Byrd of the British Naval Air Forces had visited the job site that day (See Field Record Item No. 21).

(Supplemental Information to 1941 Final Report)

General correspondence between Modjeski, Masters and Chase and American Bridge Company (See Field Record Item Nos. 26 through 41).

Construction of Approach Superstructure

The written historical and descriptive data used as a basis for this section of the report is the March 26, 1941 Mississippi River Bridge At New Orleans, Louisiana Final Report prepared by

Frank M. Masters of Modjeski and Masters Engineers to The Public Belt Railroad Commission of the City of New Orleans on pages 75 through 79 (See Field Record Item No. 1).

Refer to copies of original Mississippi River Bridge at New Orleans drawings by Modjeski, Masters and Chase, Bridge Engineers, HAER No. LA-17 Sheet Nos. 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, and 28.

Refer to 4" x 5" black and white photographs of the existing bridge (2005) taken by Mark Lamkin, Photographer. See Photographic Index HAER Nos. LA-17-1 through LA-17-6; HAER Nos. LA-17-9, 12, 13, 14 and 16.

Refer to 8" x 10" black and white photographic prints. See Photographic Index HAER Nos. LA-17-65, 66, 67, 69, 72, 73, 86, 88, 89, 91, 92 and HAER No. LA-17-175 through 188 and HAER No. LA-17-201 and LA-17-203.

Design and Construction of Additional Contracts

The written historical and descriptive data used as a basis for this section of the report is the March 26, 1941 Mississippi River Bridge At New Orleans, Louisiana Final Report prepared by Frank M. Masters of Modjeski and Masters Engineers to The Public Belt Railroad Commission of the City of New Orleans on pages 80 through 81 (See Field Record Item No. 1).

Refer to copies of original Mississippi River Bridge at New Orleans drawings by Modjeski, Masters and Chase, Bridge Engineers, HAER No. LA-17, Sheet Nos. 18, 19, 24, 25, 26, 27 and 28 of 28.

Substructure Settlement

The written historical and descriptive data used as a basis for this section of the report is the March 26, 1941 Mississippi River Bridge At New Orleans, Louisiana Final Report prepared by Frank M. Masters of Modjeski and Masters Engineers to The Public Belt Railroad Commission of the City of New Orleans on pages 82 through 86 (See Field Record Item No. 1).

Principal Dimensions and Quantities

The written historical and descriptive data used as a basis for this section of the report is the March 26, 1941 Mississippi River Bridge At New Orleans, Louisiana Final Report prepared by Frank M. Masters of Modjeski and Masters Engineers to The Public Belt Railroad Commission of the City of New Orleans on page 88 (See Field Record Item No. 1).

Construction Fund

The written historical and descriptive data used as a basis for this section of the report is the March 26, 1941 Mississippi River Bridge At New Orleans, Louisiana Final Report prepared by Frank M. Masters of Modjeski and Masters Engineers to The Public Belt Railroad Commission of the City of New Orleans on page 89 (See Field Record Item No. 1).

Construction Costs by Contracts

The written historical and descriptive data used as a basis for this section of the report is the March 26, 1941 Mississippi River Bridge At New Orleans, Louisiana Final Report prepared by Frank M. Masters of Modjeski and Masters Engineers to The Public Belt Railroad Commission of the City of New Orleans on pages 90 through 97 (See Field Record Item No. 1).

Abstracts and Specifications

The written historical and descriptive data used as a basis for this section of the report is the March 26, 1941 Mississippi River Bridge At New Orleans, Louisiana Final Report prepared by Frank M. Masters of Modjeski and Masters Engineers to The Public Belt Railroad Commission of the City of New Orleans on pages 98 through 116 (See Field Record Item No. 1).

Governor and U.S. Senator Huey P. Long

Huey P. Long served on the Railroad Commission from 1918 through 1928 and from 1924 through 1928 he served as its chairman. Having served in this position, his interest and familiarity with the problems of highway and rail transportation in Louisiana was understandable. As a "Populists" candidate, Long made highway and transportation improvements one of the prominent themes of his gubernatorial campaign in 1927 and 1928. He was elected Governor of Louisiana in 1928. Long served from May 21, 1928, until his resignation on January 25, 1932, having previously been elected United States Senator in 1930. His Senate term began on March 4, 1931 but he did not assume his duties in Washington until January of 1932, preferring to continue as Governor (Biographical Directory of the United States Congress, Date Unknown) (See Field Record Item No. 43).

As Governor he sponsored a highway bond amendment passed by the Louisiana legislature in 1928. In the first half of 1929, the Highway Commission, chaired by O.K. Allen, decided to begin preliminary plans for eight highway toll bridges, most of them in North Louisiana, to be funded by a bond issue. The bond issue was poorly drawn and received little support. The next year, Governor Long and some well connected political supporters personally negotiated with the Nashville Bridge Company to build the eight bridges as a package deal for 6 million dollars. Eventually the bridges were built under a Federal Aids Project (Cusick, 1995 and Williams, 1969).

Huey Long's understanding of the problems of the railroad service in the New Orleans area and the need to consolidate the use of the railroad trunk lines was clear. He had also, no doubt, been very knowledgeable and up-to-date on the plans and the desire to build a bridge across the Mississippi River as part of the economic development of the city. Huey also knew the importance of New Orleans as a major river port for the United States and as the lynch-pin in the development of Louisiana's economy and the future progress of the state. His involvement with the project cannot be minimized including the commitment from the State of Louisiana for several million dollars to help finance the cost of the bridge.

Having announced his candidacy for the Democratic nomination for President of the United States in August 1935, just a few short months before the completion of the great Mississippi River Bridge at New Orleans, Huey P. Long was shot by an assassin on September 8, 1935, in the new State Capitol Building, in Baton Rouge that he was instrumental in building and died on September 10, 1935 (Biographical Directory of the United States Congress, 1991).

Sometime between the assassination of Long and the completion of the bridge, it was memorialized in his honor as Governor and United States Senator. And so it stands today, carrying the name of "The Huey P. Long Bridge", one of the greatest combined highway and railway bridges ever built in the country.

Bridge Opening and Dedication Ceremony

As the work on the bridge came to a completion near the end of 1935, plans for an opening celebration and dedication began to take shape. A committee for the opening ceremonies and dedication was appointed by the Public Belt Railroad Commission and the City of New Orleans on October 16, 1935. It was charged to "develop information relative to appropriate dedicatory services in the connection with the official opening of the new bridge across the Mississippi River and to ascertain the relative cost of same". Members of the committee included Messrs. Edgar Murray, Chairman; Jac Bloom and C.S. Williams.

The committee began its work the same afternoon having contacted Mr. H. Van R. Chase, General Manager of the New Orleans Association of Commerce. Mr. W. S. Callender, Chairman of their Publicity Committee was assigned to work with the group to compile information and develop a program. The next day, October 17, 1935, the committee visited the bridge site, accompanied by Chief Engineer V. J. Bedell, to select a tentative location to hold the ceremonies. Governor O. K. Allen designated Mr. Seymore Weiss to represent the State Highway Department.

Several meetings were held over the next few weeks involving conferences with numerous railroad officials, the Public Belt Railroad, the Reconstruction Finance Committee, and the bridge engineers to develop a program. On November 8, 1935, the committee prepared and gave a report to the Honorable Thomas F. Cunningham, President Pro Tem of the Public Belt Railroad Commission and the City of New Orleans, at the Municipal Building, indicating that the

committee and others represented had met on November 6, 1935, at 3:00 p.m. and had come up with a tentative program outline (See Field Record Item No. 44). The date for the opening ceremonies was set for Monday, December 16, 1935 at noon (See Field Record Item No. 42).

Four major objectives were outlined to be used as the basis of planning the celebration. First, the bridge was to be recognized as being a symbol of the transportation improvements made in New Orleans. Second, the bridge shows how it improved the port facility that was recognized throughout the Mississippi Valley as the "Port of the Mississippi Valley". Third, the significance of the location of the bridge at the central point of the "Old Spanish Trail" should be celebrated. Fourth, the combined cooperation of numerous local, state and federal agencies should be recognized.

The celebration outline focused on a review of the "History of Transportation". It included the following:

1. A salvo of guns to begin the event.
2. A red, white and blue ribbon is cut at the New Orleans end (east bank).
3. The flags of the city, state and nation would be raised at the top of the bridge.
4. An Indian runner with a sack of mail would be the first person to cross the bridge and his time is measured.
5. A colonial Rider on horseback receives the mail and returns it and his time is measured.
6. A state coach crosses next and its time is measured.
7. A primitive Locomotive crosses next, (probably the old Huntington, wood burner).
8. An early Automobile crosses next.
9. A modern Automobile crosses next.
10. A modern Bus crosses next.
11. A paddle wheeler crosses under the bridge coming down stream.
12. A modern steamship crosses under the bridge going up stream.
13. An airplane flies overhead across the bridge.

There would be one minute talks, at the end of each crossing, about the history of transportation developments at New Orleans. These talks would be made by the men who had leading roles in the planning and development of the bridge project. The talks were to be amplified and broadcast over a national radio hook-up. Motion pictures were to be made of the crossings. At each end of the bridge, photographs were to be made of the bridge with every form of transportation shown.

An outline of the forms of publicity was made. It included 1,000, 5" X 7" photographs of the bridge proper; 300 small photographs of Ralph Modjeski, the engineering genius behind the bridge; 500, 8" X 10" photographs of the girl or group of girls named as sponsors of the celebration; 750, stereotype mats of the bridge with inset picture of the sponsor; 3 sets of 1,000 each of mimeograph stories about the bridge and the celebration would be sent out in advance to

editors and travel agencies; and 200,000 folders, attractively printed describing the bridge and its surroundings.

The Mail Bag to be carried across the Bridge would contain the following items:

1. Letters from Governor Allen to governors of every state and to rulers of every country in the world:
 - a. Inviting them to New Orleans and Louisiana.
 - b. Telling them about the bridge.
 - c. Telling how the letter itself has been transported by every kind of transportation agency known to man.

Another idea suggested was to have a powerful whistle blast the letters "N.O.".... "66", in Morse Code, to be picked up and relayed throughout the Mississippi Valley indicating that the Mississippi River's finest bridge was now open. Prizes would be offered to persons reporting having heard the code signal.

Invitations would be sent to national officials, the governors of each state or their representative, the Mississippi Valley Association units and officials, the American Automobile Association, and the Old Spanish Trail towns and officials. Invitations would also be sent from Mayor Walmsley to Mayors of other cities, various railroad officials, from the Louisiana Highway Commission to other highway commissions, and others. It was also suggested that editors of various news reels be invited as well. Provisions for a meal function were suggested. The cost of the Celebration and the Publicity was projected to be \$6,000. The report was unanimously adopted. (See Field Record Item No. 44 through 49).

By December 10, 1935, the events surrounding the opening ceremony began to take shape. An official train was scheduled to leave Union Station at Rampart and Howard Avenue at 9:30 a.m. The train, loaded with approximately one thousand people would travel on the Public Belt's tracks over the bridge to the west side and then return to the east side where the ceremonies would be held. It was suggested that the official platform to hold the ceremonies be located at Bent No. 40 on the downstream side of the bridge. Upon the arrival of the train, the pageant of runners, riders, automobiles, trains, boats and airplanes would take place (See Field Record Item No. 44 through 49).

Miss Rose Long, wife of recently assassinated Senator Huey Long, would cut the ribbon, opening the highway portion of the bridge and Miss Augusta Walmsley, would pull the ribbon that opened the gate on the railroad track, just above the platform at Bent No. 40. Several bands and songs by school children would also be involved (See Field Record Item No. 44 through 49).

A formal banquet for 300 invited guests was to be held, at 7:00 p.m., the evening of December 16, at the Tip-Top Room of the Roosevelt Hotel. Tickets for the event were to cost \$3.00 each.

Mr. Frank Masters, partner in the firm of Modjeski, Masters & Chase would make a speech about the bridge at this banquet (See Field Record Item No.44 through 49).

Bridge Repairs and Changes

For all practical purposes, the Huey P. Long Bridge and its approaches have not changed in form and design much over the 70 years of its existence. The most notable change to the original bridge design is the loss of the decorative light poles and fixtures which were located along each side of the highway roadway as part of the railing design and the removal of the metal railroad decking.

In 1948, in an inspection report by Modjeski and Masters, the deteriorated condition of the sheet metal covering of the railroad deck was noted and recommended to be replaced. On November 9, 1940, after several years of experimenting with various types of material, the installation of a new, aluminum sheet metal deck covering got under way and the work continued into 1950. The work included the adding of railroad timber ties, the installation of tie pads, the refastening of rails, the restoration and fastening of timber guard rail hardware, the laying of the aluminum sheets and the reconditioning of the walkway plates (Modjeski & Masters, 1948).

By 1952, the installation of the new deck covering was complete except for covers over the timber guards on the main spans and on the section of the west approach which was damaged by a tornado. The covering had a two-fold purpose of protection of the wood timber ties against fire hazards and protection of the metal work against brine drip action (corrosion) on the structural steel. By 1956, the danger from fire caused by locomotives was reduced significantly by the use of diesel powered engines (Modjeski & Masters, 1952).

In a 1953 inspection report by Modjeski and Masters, it was reported that wood tie replacement is being maintained satisfactorily. It is also reported that the Mississippi River profiles since the last inspection show no unusual changes over the past year, except for a continuing scour at Pier II and a general cutting at Pier III (Modjeski & Masters, 1953).

Painting of the bridge is in constant progress. On December 16, 1954, an inspection report indicates that the current painting campaign is scheduled to be complete in the coming year. It also suggests that the next painting program may be inaugurated in 1956 as some of the paint in the present campaign was applied in 1951. It is also reported that the re-gauging and transporting of rails during the past few years has resulted in "Spike-Killing" (a deterioration of the wooden timber ties) in some areas and will require the replacement of ties. Replacement of the wooden timber ties is also in constant progress. There are 34,650 ties associated with the railroad portion of the bridge. Over the years, damage was caused to the steel handrails struck by vehicular traffic and they have been repaired or replaced under the normal maintenance by the Public Belt Railroad. (Modjeski & Masters, 1954).

In late November of 1958, a recommendation was made to remove all approach downspouts since the removal of the deck covering had made them useless. This was necessary since it was observed that many of the U-bolt type downspout clamps were found to be working against and cutting into one of the sloping legs of the girder "X" bracing to which they were attached. At the time of removal, places on the girder bracing members from which the downspout brackets were removed required immediate spot painting. These areas on the bracing members, now exposed, showed formation of medium to heavy rust. Many inspection rods were found to be loose or broken at the stiffener angles from wear and vibration fatigue. During the year, a painter was lost in an accident attributed to a faulty inspection rod. The method of repairing the inspection rods recommended included installing a tight wire rope instead of the inspection rod on one girder to compare the effectiveness of wire rope with the rods. (Modjeski & Masters, 1958).

In January of the same year, new continuous 1,200 linear feet of weld rail sections were installed on the low curve of the West Approach. Approximately 1,350 aluminum walkway plates had been installed up to that time as well. In 1959 maintenance was performed at the wider pin collars of the eyebars. In the early part of 1960, replacement of the steel walkway plate with aluminum plates came to a virtual standstill but by December 26, 1961, all remaining aluminum deck plates originally provided to seal the deck were removed from the structure. Except for the walkplates, the entire deck from abutment to abutment is now open (Modjeski & Masters, 1961).

During the fall and early winter of 1980, a new Pier II fender system was installed and the existing Pier I fender was rehabilitated. The work was performed by Williams-Mc Williams, Contractors and was completed November 7, 1980. On April 2, 1980, a barge mounted crane collided with the bridge superstructure of Span I in the vicinity of Panel I-18 and caused serious damage to the roadway, railing and railroad members. During the same year, Bent 41E at the east traffic circle, was hit by an automobile and required repairs. A permanent protective concrete barrier for Bent 41 E was installed in the design of the east traffic circle overpass under construction at the time.

In the Spring of 1983, water was found surfacing from the ground near Bent 100W. By 1993, both the East bank and West bank highway abutment backwalls continued to lean slightly toward the river. At Bent 100W, the water has breached the ring levee indicating that the hydrostatic pressure has increased or the natural water table has risen. Bubbles continued to percolate from the ground at Bent 100W upstream. A recommendation was made then to raise the height of the ring levee surrounding the bent (Modjeski and Masters, 1983 and 1993).

In 1986, inspection reports indicated that there were serious problems with the electrical wiring system for the light standards along the edge of the roadway. Maintenance personnel complained of spending excessive amounts of time repairing shorts in the system every time it rained. It was recommended at the time to replace the entire wiring system between light standards. Unfortunately sometime during 1988, the entire system was deactivated and all of the light standards were cut off flush with the top of the handrail. The light standards were turned over to

the Louisiana Department of Transportation and Development (DOTD) for disposal (Modjeski and Masters, 1986).

Collars were installed at panel points I-4 and I-18 near mid-length between eyebar pinned ends to reduce the oscillation of the eyebars due to live loads and wind loads. River gages were installed on Pier I in 1991. A new railroad signal system was installed in 1993 requiring the installation of new signal platforms (Modjeski and Masters, 1993).

As of May 5, 1994, there had been forty-three vessel collisions with the bridge causing various degrees of damage to the substructure and the superstructure.

The deterioration of the highway deck and the rotation of the sub-floor beams at the west abutment for the eastbound roadway were repaired during a Louisiana Department of Transportation and Development (DOTD) roadway repairs contract in June of 1997. In addition, 36,000' of guardrail was installed on the existing bridge railing posts to strengthen the bridge rail system (Modjeski and Masters, 1997).

In 1999, plans were being prepared to install fiber optic installations on the bridge.

The crew of the Public Belt Railroad required to maintain the work on the bridge in 1993 consisted of twenty-seven people broken down as follows (Modjeski and Masters, 1993):

Bridge Supervisor	1
Assistant Bridge Supervisors	2
Bridgemen	7
Bridgeman's Helpers	6
Painters	6
Laborer	1
Bridge Patrolmen	4

Proposed Widening the Bridge Spans

The existing Huey P. Long Bridge is a combined railway and highway bridge. The bridge superstructure consists of a long span cantilever through truss with railroad loads supported within the trusses and highway loads supported on cantilevered floorbeam brackets. It remains today, one of the great bridge engineering accomplishments for railway and highway bridges built in the country. The existing bridge consists of two railway tracks and four 9' wide lanes for highway vehicles (2' – 18' wide roadways on each side of the bridge). As New Orleans and the surrounding area grew, vehicular traffic increased substantially and talk of building a new bridge was given serious consideration. A 1982 feasibility study on the cost of constructing a new, second span crossing of the river determined that a new bridge would be too costly to build (Peterson, Conway, Doyle, 2005; and Peterson, Conway and Ouyang, 1994) (See Field Record Item Nos. 50 and 51).

In 1986, the Louisiana Department of Transportation and Development (DOTD) authorized Modjeski and Masters, the original engineering firm for the existing bridge, to perform conceptual studies of widening alternatives. The idea of widening the bridge was explored because it would reduce the environmental impacts in the area, eliminate the procurement of new property for a new bridge, the construction cost would be substantially lower and existing rights-of-way could be used as well. The directive from the state required the engineers to study the feasibility of widening the bridge ranging from potential roadway widths of 24', 28', 34' and 40' (Peterson, Conway, Doyle, 2005; and Peterson, Conway and Ouyang, 1994) (See Field Record Item Nos. 50 and 51) (See Photographic Index HAER No. LA-17-213).

The engineers looked at several different widening alternatives including studies that look at extending the existing cantilever brackets, a scheme using a cable stayed design and a scheme using an auxiliary truss. Eventually, the scheme using the Auxiliary Truss ("widening trusses") was selected as the most desirable due to the cost, its overall feasibility and the fact that it would cause less disruption to vehicular traffic. The state decided to rehabilitate the existing bridge by widening the existing two 18' wide cantilevered roadways to 43' each. The roadways on each side of the bridge will consist of three 11-foot lanes with an 8-foot shoulder on the outside and a 2-foot shoulder on the inside. (Peterson, Conway, Doyle, 2005; Peterson, Conway and Ouyang, 1994; and DOTD, 2005) (See Field Record Item Nos. 50 and 51) (See Photographic Index HAER No. LA-17-213).

Funding for the bridge widening would be used from the Transportation Infrastructure Model for Economic Development (TIMED) Program. The \$3.8 billion program, funded through voter approved taxes on gasoline, is set up to enhance economic development in the state through the investment in transportation project (Peterson, Conway, Doyle, 2005; and Peterson, Conway and Ouyang, 1994) (See Field Record Item Nos. 50 and 51).

Modjeski and Masters was authorized to begin the preliminary design work on March 18, 1992. The preliminary design for the substructure widening involved a proposal that completely encased the existing piers. During the final design phase, this idea was modified so that the lower portion of the pier remained encased, but the upper section would consist of a structural steel frame concealed behind concrete panels. The steel frame is designed to be located above the section of the pier potentially vulnerable to vessel collisions. The advantage of this change reduced the additional dead load supported by the caisson, defined more clearly a load path for the widening loads, and provided the opportunity to jack the center support allowing the shifting of some dead load to the center portion of the pier/caisson (Peterson, Conway, Doyle, 2005) (See Field Record Item Nos. 50 and 51) (See Photographic Index HAER No. LA-17-205, 206, 207, and 208).

The existing roadway was designed to be supported by stringers on cantilevered floorbeam brackets, but will be replaced by a reinforced concrete roadway deck supported by stringers. The corresponding stringers were designed to be supported by "traditional" floorbeams set between an existing and a widening truss. In addition, the widening trusses were designed to be supported

by widening the existing piers above the river's high water level. Both reinforced and post-tensioned concrete is proposed be used in the widening of the existing piers (Peterson, Conway, Doyle, 2005) (See Field Record Item Nos. 50 and 51). (See Photographic Index HAER No. LA-17-209, 210, 211 and 212).

During the final design phase of the main bridge widening, many challenges were encountered. Most of the challenges encountered were related to the typical problems normally inherent in rehabilitation projects, except in this case the bridge was one of the largest bridges in the country crossing the largest river in the world.

The Substructure presented some unique challenges related to the strength of the existing concrete, the use of Load Factor versus Service Load Design and Pier Jacking Criteria. The base of the existing bridge piers will be widened by 2 ½' on each side (between piers), in effect reducing the distance between piers by 5'. The affects of this action is minimized by the fact that the limit of the navigational channel width is 500' wide and the actual distance between the piers is 790'. In addition the existing fenders on the piers will be removed and replaced with rubbing strips attached to the side of the widened piers (Peterson, Conway, Doyle, 2005; Peterson, Conway and Ouyang, 1994; and DOTD, 2005) (See Field Record Item Nos. 50 and 51).

The Superstructure presented equally unique challenges. Some of the issues to be considered included the behavior of the existing and widening trusses. Also considered were the truss geometry and deflection issues during construction and erection, maintenance of rail and highway traffic during construction, the final forces in the widened floorbeam and hangers needed evaluation and loads could not be imposed into the existing truss members during construction. Additionally, the interaction between the widened superstructure and the widened substructure need careful analysis (Peterson, Conway, Doyle, 2005) (See Field Record Item Nos. 50 and 51).

Two detailed accounts of the proposed widening of the Huey P. Long Bridge was written by the current bridge engineers, Modjeski and Masters. Paper Number IBC-94-44, written by Bruce E. Peterson, P.E., William B. Conway, P.E. and Yu Ouyang, was presented at the eleventh Annual International Bridge Conference in Pittsburgh, Pennsylvania in 1994 (See Field Record Item Nos. 50 and 51). Paper Number IBC-05-35, written by Peterson, Conway and Gerard P. Doyle in 2005. This paper outlined the final design challenges of the proposed bridge widening (See Field Record Item Nos. 50 and 51).

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